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THE

PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE NINETEENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, MINNEAPOLIS, DECEMBER 28, 29 AND 30, 1910

Report of the Secretary

The nineteeth annual meeting of the American Psychological Association was held in Minneapolis on Wednesday, Thursday and Friday, December 28, 29, and 30, 1910, in affiliation with the Western Philosophical Association and the American Association for the Advancement of Science. All sessions were held in the buildings of the University of Minnesota. Everything possible was done for the general convenience of all, and the members of the department of philosophy and psychology did much to contribute to the enjoyableness of the occasion by personal courtesies extended to many of the members present.

The Association was represented by about forty of its members, most of these from the west. Members of the North Central Association of Teachers of Psychology were present at several of the sessions.

On Wednesday morning, December 28, at ten o'clock, the meeting was formally opened by the President, Mr. Pillsbury, and the carrying out of the printed program was immediately begun.

Two joint sessions were held, one on Wednesday afternoon with Section L of the American Association for the Advancement of Science, and the other on Thursday morning with the Western Philosophical Association. At the latter session the marked contrast between the philosophical and the psychological usages of the term 'consciousness' came emphatically to light.

On both Wednesday and Thursday evenings, after the addresses of the Presidents of the Philosophical and Psychological Associations respectively, a smoker was given by the department of philosophy and psychology of the University.

The program occupied two days and a half. Abstracts of the various papers will be found below.

At the business meeting, held Friday forenoon, the following business was transacted:

The following officers, nominated by the Council, were elected: *President* for 1911, Professor C. E. Seashore, of the University of Iowa; *Secretary and Treasurer for three years*, Professor W. V. D. Bingham, of Dartmouth College; *Members of the Council to serve three years*, Professor A. H. Pierce, of Smith College, and Professor H. C. Warren, of Princeton University.

On nomination by the Council the following candidates were elected to membership:

Edward Scribner Ames, Ph.D., University of Chicago; George F. Arps, Ph.D., University of Illinois; W. C. Bagley, Ph.D., University of Illinois; Frederick G. Bonser, Ph.D., Teachers College, Columbia University; William F. Book, Ph.D., University of Montana; Eliott Park Frost, Ph.D., Yale University; Robert H. Gault, Ph.D., Northwestern University; Nathan A. Harvey, Ph.D., Michigan State Normal College; Grace Helen Kent, A.M., George Washington University; Linus W. Kline, Ph.D., Minnesota State Normal School; Harvey A. Peterson, Ph.D., Illinois State Normal University; A. J. Rosanoff, M.D., Kings Park State Hospital, New York; Eugene C. Rowe, Ph.D., Central State Normal School, Michigan; Arthur H. Sutherland, Ph.D., University of Illinois; E. B. Titchener, LL.D., Cornell University; Clarence S. Yoakum, Ph.D., University of Texas.

The treasurer's report, audited by the Council, was read and approved.

On recommendation by the Council it was voted to accept the invitation of Dr. S. I. Franz to meet next year in Washington, the Council being empowered, however, to make any change of plan that may ultimately seem advisable.

On recommendation by the Council it was voted that a committee of nine be appointed by the chair to consider and report on the relations of the Association to the American journals concerned with psychological research. The chair appointed on this committee Messrs. Warren, Angell, Woodbridge, Cattell, Sanford, Bell, Yerkes, Prince and Hall.

On motion by Professor Martin it was voted that a committee be appointed by the President to hasten, if possible, the publication of résumés of psychological investigations, and to induce the authors themselves to furnish short abstracts of their results to the various

psychological journals as soon as their papers appear in print, and to induce the psychological journals to make the résumés furnished the basis for reports on such work. (The incoming President referred this matter to the committee on periodicals just appointed.)

On recommendation by the Council, amended by the Association, the following resolutions were voted: (1) that the Association extend a hearty welcome to the Seventh International Congress of Psychology for its meeting in 1913; (2) that in place of the regular meeting in December, 1912, the Association meet in the spring of 1913 in conjunction with the International Congress; (3) that a committee, composed of Messrs. Cattell, Münsterberg, Sanford, Titchener, Watson and Bingham, be appointed to coöperate with the officers of the Congress.

On recommendation by the Council it was voted to make a further grant of an amount not exceeding $250 to the Committee on Tests for the publication of their results, such publications to become the property of the Association. It was also voted that each of the authors of these reports be given twenty free copies of the same.

On motion by Professor Bingham it was voted that the incoming President appoint a committee of three on the 'class experiment' and the 'home experiment,' as recommended in the report of the committee of the Association on the teaching of psychology. (Cf. PSYCHOLOGICAL MONOGRAPH, No. 51, p. 91.)

On motion by Professor Swift it was unanimously voted that the Association express its appreciation of the pleasant receptions given to its members by the department of philosophy and psychology of the University of Minnesota, as well as for the many other courtesies received from the department.

It was voted that the proceedings of this meeting be printed.

REPORT OF THE TREASURER FOR 1910

DR.

To Balance from 1909 meeting	$3,070.71
Dues received from members	221.40
Interest from July 1, 1909, to July 1, 1910	108.41
Petty cash on hand January 1, 1910	.70
	$3,401.22

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Stationery and printing	$82.50
Clerical assistance	10.45
Postage	35.40
Express and telegram	4.60

Travelling expenses (1909 meeting)	21.16	
Appropriation for publication of report of Committee on Methods of Teaching Psychology	150.00	
Distribution of free copies of the above	18.82	
Exchange on checks	.60	323.53
Balance in Union Dime Savings Institution	$2,973.27	
Balance in Fifth Avenue Bank	104.42	3,077.69
		$3,401.22

A. H. PIERCE,
Secretary and Treasurer.

NORTHAMPTON, MASS.,
December 15, 1910.

Audited by the Council.

ABSTRACTS OF PAPERS

President's Address: The Place of Movement in Consciousness. WALTER B. PILLSBURY.

(This address will be published in full in the PSYCHOLOGICAL REVIEW, Vol. XVIII., No. 2, March, 1911.)

The Psychology of Drowsiness. H. L. HOLLINGWORTH.

A report and analysis of the normal drowsiness hallucinations recorded by two observers, during the past two years. The drowsiness hallucination seems to be a 'flashlight' perceptual fusion or complication, and is further characterized by transformation of imagery type; sensory, perseverative and ideal substitution; fluid association on a sensory basis; and by isolation of association trains when they develop. It is accompanied by tendencies toward grandeur and vastness, by rapidly ensuing amnesia, and by absence of symbolism.

(The paper will appear in full in the January number of the *Amer. J. of Psychol.*)

The Projection Method. LILLIEN J. MARTIN.

Series I.—Experiments were made to ascertain (1) whether visual images are projectable into space at will; if so (2) whether when so projected they are amenable to examination, and of such a character as to be advantageously examined; and (3) whether anything is gained by having the images so projected. The reagents were ten members of the Psychological Institute of Bonn and, in part, fifty Stanford University students.

The reagent was seated at a table on which was placed in turn a flower-pot, postal-card of a landscape, etc. As each object was set

on the table, the reagent was directed to place a visual image of the object at its side. If able to obtain the required image, he was asked to give his introspections to protocol, and was questioned on points calculated to throw light on theories regarding the difference between the perception of a real object and its image. The introspections show in general that the reagents were able to project their visual images with no very great difficulty, and to compare them when so projected with the corresponding object.

Conclusions: (1) The projection method is strong in just those respects in which the questionnaire is weak. (2) It enables one to make a comparison as regards strength of impression in the case of different reagents. (3) The standard and that to be compared with it are put under the same environment. (4) By the projection method the object and image can be examined simultaneously. (5)This method does away with the difficulty regarding the time that one may allow to elapse after the completing of the reaction before one begins to put in question the reliability of the introspective reports. (6) The image can be made the same size as the object, and (7) can be placed at the same distance. (8) It can also be kept constant, so far as the reagent's ability to do so permits, for he has a standard to compare it with. (9) Other memory and fancy images are also much less prone to come unbidden and push aside the image under study. (10) The method furnishes favorable conditions for comparing voluntary and involuntary images, and (11) for learning to what extent *Erkenntniss* depends upon visualization.

Series II.—To learn whether the projection method can be advantageously employed in studying the difference between memory and imagination.

The reagents were instructed to project a visual memory and imaginative object side by side on the table. Introspections and questions as before. The method showed itself adequate.

Series III.-IV.—Tests made showed that the method is applicable to the study of illusion, hallucinations, etc.

Series V.—To ascertain whether the projection method can be used to advantage in investigating auditory memory and imagination, —illusions and hallucinations. The results show that some additional precautions are needed in experiments involving auditory stimuli.

An Introspective Analysis of Tactual Phenomena. GEORGE F. ARPS.

The introspections of this paper were obtained from two groups of pressure stimuli. In the first group the pressures were more or

less extended in duration; in the second group they were of momentary duration. In both groups the pressure stimuli were applied successively to the upper phalanges of the index and middle fingers. The standard stimulus, in the first group, varied in duration but remained constant in intensity. The standard stimulus, in the second group, remained constant in duration and intensity. The comparative stimulus remained constant in duration and varied in intensity in both groups.

In group one, the standard pressure was given by means of an especially constructed electro-magnetic pressure apparatus; the comparative pressures were given by means of a pressure-balance with a pneumatic attachment. In group two, both standard and comparative stimuli were given by means of small metal balls dropped from small electric magnets.

The introspections center chiefly about the subjective variations in the intensity of the standard stimulus and the subjective fluctuations of the period of duration of the comparative stimulus.

Summary of results (first group): (1) It appears that the comparative stimuli, under the given conditions, render constancy in intensity, through assimilative effects, in a given norm subjectively impossible. (2) The assimilating elements (comparative stimuli) are most efficient within certain limits of a series, above and below which assimilative effects are minimal or entirely lacking. (3) Greater assimilative effectiveness is found when the normal stimulus precedes the comparative stimulus. (4) There is a noticeable increment in the assimilative efficiencey when comparative stimuli are given in the ascending series. (5) It appears that the assimilative efficiency is proportional to the duration of the norm and of the comparative stimulus. (6) That some momentum in a series of comparative stimuli appears essential to assimilation is shown by the large number of fluctuations in the standard stimulus at the middle of any series.

The fluctuations noted above pertain to the intensity of the standard stimulus. Fluctuations of a somewhat different order are recorded for the period of duration of the comparative stimulus. It is believed that the normal stimulus acts assimilatively on the comparative stimulus with reference to its duration as does the comparative stimulus on the normal stimulus with reference to its intensity.

Summary of results (second group): The results are practically negative. Only 16 cases of norm fluctuations are recorded among

a total of 1,622 experiments. Assimilative efficiency is dependent upon the factor of duration. Both assimilating and assimilated elements appear to require more than momentary duration to induce fluctuations in the subjective intensity of the norm.

The Study of Consciousness and the Study of Behavior. EDWARD L. THORNDIKE.

The statements about human nature made by psychologists are of two sorts,—statements about *consciousness*, about the inner life of thought and feeling, the 'self as conscious,' the 'stream of thought'; and statements about *behavior*,—about the life of man that is left unexplained by physics, chemistry, anatomy and physiology, and is roughly compassed for common sense by the terms intellect and character.

The fashionable attitude in psychology has been to restrict its subject-matter to statements about consciousness. But in animal psychology this restriction becomes obviously unnatural and annoying. It appears that in human psychology as well it is unnecessary, and perhaps inadvisable, to continue the pretense that there is an impassable gap—a real discontinuity—between any and all of the animal's movements and his states of consciousness. Scientific judgments about a man's tooth-ache, anxiety, or judgment that 'seven threes equal twenty-one' do not differ thus radically from judgments about his stature or body-temperature. The former differ in their greater variability, greater dependence upon the man's verbal reports, and greater likelihood that one man will have, in respect to them, certain sources of information denied to other men. But the differences are only of degree. The facts of mental science need not be 'known to one observer only' or matters of 'pure experience.' If by the sun is meant the sun of common sense, physics and astronomy, then by a man's pain we can mean the pain of medicine, economics and sociology,—the pain as known to any one, and to the suffering individual long after he *was it* or *had it*. The facts of mental science are spatial. Napoleon's mind lived in France and went to Russia as truly as did his body.

Two noteworthy advantages are secured by the study of behavior. First, the evidence about intellect and character offered by action and the influence of intellect and character upon action are given due attention. Second, the connections of conscious states are studied as well as their composition.

The Relation of Strength of Stimulus to Rate of Learning in the Chick.
L. W. Cole.

The experiments were undertaken at the suggestion of Professor R. M. Yerkes in order to learn under what strength of stimulus chicks most rapidly learn to make, respectively, an easy, a medium, and a difficult discrimination. The chicks were taught to escape from the experiment box by choosing always the darker of two passageways, or, rather, by going always toward the darker of two opal flashed glass screens at which the passageways ended.

Three conditions of discrimination were used. For the condition termed 'easy' one screen was illuminated by an electric lamp 33.5 cm. distant, the other screen was not illuminated. For 'medium' discrimination, one lamp was at 23.5 cm., the other at 98.5 cm., and for 'difficult' discrimination the lamps were placed, respectively, at 23.5 cm. and 53.5 cm. from the screens.

For each condition of discrimination groups of chicks of exactly the same age were trained under the influence of a weak, a medium, and a strong electric shock, though even the latter was not of harmful intensity. After necessary preliminary work, the rate of the chicks' learning to make the discriminations for each of the three strengths of stimulus was determined.

When the two screens were easy for the chick to discriminate the number of trials required for perfect discrimination decreased with increase in the strength of the stimulus, *i. e.*, the stronger the stimulus the quicker the learning. For medium difficulty of discrimination this relation did not hold in the case of the strong stimulus. It produced slower instead of more rapid learning. In this particular my results agree with those of Yerkes and Dodson for the mouse. Under the difficult condition of discrimination the chicks divided into two groups, those which learned more quickly the stronger the stimulus, and those which failed to make the discrimination. The latter group included one half the number of chicks tried with the strong stimulus. The chicks which failed made more errors in their early trials and consequently received more pain stimuli at the beginning of the tests than the chicks which succeeded in learning to discriminate the two screens. By determining the threshold of stimulation for the electric current, for six of the chicks, it appeared that the results of the experiments were independent of a difference in sensitiveness of individual chicks.

The behavior of the chicks and the records of their learning seem to indicate that, under the medium condition of discrimina-

tion, the strong stimulus retarded learning in two thirds of the chicks, while, under the difficult condition of discrimination, it completely inhibited learning in one half their number, but in the remainder an increase of stimulus uniformly increased the rapidity of learning.

Some Results in Comparative Psychology. JOHN F. SHEPARD.

It was suggested that the higher forms of control might be divided into four types: (1) Formation of simple connections, a stimulus calling forth the effects of others that have been experienced with it. (2) Trial-and-error, establishing habits out of a mass of hit-and-miss responses. Explained as follows: The neurological unit of attention is the passage of processes over a definite set of synapses changed as in associations. This involves inhibitions. Some combination of hit-and-miss responses gives a result having definite significance either on inherited or acquired grounds. This definite result, not pleasure, is the selective factor which builds up the habit. (3) Application of experience to a similar situation, with analysis; made possible when synaptic connections become sufficiently detailed, combined with sufficiently definite inhibitions. Imitation and learning by being-put-through are explained as special forms of this. (4) The plan: A response tending to take place and being excited by another, but inhibited by the incompleteness of that other.

The experiments showed that people learn labyrinths from both ends, although the method of learning is not exactly the same at both.

In the first labyrinth, all rats and cats learned backwards from the food-box first, although some became familiar with the beginning before the region of the second and third errors. In other labyrinths they more often turned correctly when coming out of blinds, they dropped the errors at both ends, and learned the whole in very few trials; but they did not retain the path so perfectly until another day. In going backwards, the animals were most familiar with the end near the old food-box, and learned the end near the new food-box before the middle.

Ants learned labyrinths even when the bottoms of the alleys were renewed repeatedly during learning. They learned less perfectly with light on both sides than with light on one. Rotation of a section produced no effect. Changing the side of the light after learning controlled almost absolutely the movements of the ants. Relearning when the light was changed required three times as long as the original learning. In darkness they were nearly helpless,

possibly retaining a slight motor (?) association. The part near the food-box was followed better in going toward the food-box than away from it; that near the nest, better in going toward the nest. Definite associations were retained at least a week.

JOINT SESSION WITH SECTION L (EDUCATION) OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Individual Differences in the Correlation of Physical Growth of Elementary and High School Pupils. BIRD T. BALDWIN.

This paper gave a preliminary report of an investigation in the correlations of yearly and half-yearly increments of growth in height and weight of 350 boys and 435 girls from the University of Chicago elementary and high schools, the Francis W. Parker School and the Horace Mann School of Columbia Universi y. The records include consecutive measurements on the same individuals for periods from 3 to 11½ years, giving a sum total of nearly 6,000 measurements.

At the beginning of the investigation a mediam was found for *all* measurements in the two Chicago schools. This mediam shows, among other things, that the children in the three schools form practically a homogeneous group.

Different correlations for growth in height and weight are shown between both boys and girls who are above the median height, and those who are below it. Those above begin and end their various periods of acceleration and retardation, on the average, earlier than those below the median. The present results show the average maximum acceleration in absolute height increment for boys above the median to be between 13 and 14 years of age, for those below, between 14 and 15 years of age; for girls above the median, the acceleration is between 11½ and 12½ years of age, and for those below, 12½ and 13½ years of age. This general conclusion is supported by the average results obtained from all half-yearly increments and all yearly increments, based on the year and half-year, and for the schools individually and collectively.

The present results indicate that the same general law is applicable to weight. The maximum increase in absolute weight is earlier for boys and girls who are above the median height than for those below.

Individuals below or above the median height, as a rule, maintain approximately their relative positions throughout the period

studied, but they vary in some instances in their deviations from the median, and from one another. A few individuals whose measurements lie near the median cross from below to above, or *vice versa*, the smaller number crossing from above to below. A few show no marked changes in relative growth during the adolescent periods.

The fifty-two individual curves for both height and weight support the general conclusions stated above, and also indicate how one may prophesy the probable development of a boy or girl after once knowing his or her relative position in reference to the given median. They also demonstrate that the correlations in weight do not follow in detail the correlations in height, since there are more fluctuations in acceleration and retardation, and in several instances an actual loss in weight.

Experiments on the Perception of Number in Children and Adults. FRANK N. FREEMAN.

The experiments here reported had for their purpose the comparison of the scope of attention and number perception with visual objects in adults and children from 6 to 14 years. The objects were spots of light 1 cm. in diameter and the same distance or more apart. They were presented tachistoscopically upon a large cotton screen, the source of light being hidden by the screen.

For the scope of attention the objects were arranged at equal intervals in a horizontal row. Any other arrangement favored subjective grouping. The perception of number was also studied with objects grouped in various ways.

The percentage of correct judgments with an increasing number of objects decreased more rapidly in children than adults. This probably indicates, first, a better command by adults of grouped as compared with ungrouped objects. Not only do adults apprehend objects which are objectively grouped better than children but they have an advantage in dealing with objectively ungrouped objects which are beyond the scope of attention by means of subjective grouping.

The chief difference is not, then, in the scope of attention. This was estimated, with the aid of introspection, to vary in adults from between 3 and 4 to 6. The median was between 4 and 5. The judgments of children of 8 to 10 years averaged only 4.5 per cent. poorer than those of adults up to 4 objects. It appears then that the difference in scope of attention is less than 1. Beyond 4 objects, however, the difference in correctness is much greater—for 5 being

22 per cent. This is attributed to subjective grouping on the part of adults. The fact that there is little difference between horizontal ungrouped objects and objects grouped by threes is evidence of this.

A coöperating factor in the greater correctness of judgments of adults is the superior distribution of attention, which is especially prominent in the judgment of a complex group in which one of the sub-groups is different in number from the others. Children first attain proficiency in recognizing horizontal group forms.

Pedagogically it would seem of value to introduce number work by training in the recognition and manipulation of grouped objects. This method could well be used, as in Germany, for drill in the fundamental number operations.

The Genesis of Attention in the Educative Process. EDGAR JAMES SWIFT.

Attention means a certain arrangement of the content of consciousness, which gives clearness to one idea or group of ideas, and produces comparative, though not equal, obscurity of the others. Change of attention requires a redistribution of the content, and this is accompanied by a rearrangement of clearness.

The educational problem is to secure attention to certain ideas which usually lack the attractions needed for success in the competition with diverting ideas. The feelings cannot accomplish this because hateful ideas may be as attractive as those which are pleasant. Besides, the emotional attitude toward an idea cannot precede attention to it.

Rewards and punishments fail; the first because of uncertainty regarding the sort of knowledge that will secure the reward, and the second because it makes the implied penalty and the teacher too prominent in the consciousness of the learner. Further, both of these incentives divide the attention.

In boys, attention to ideas must be secured by identifying these ideas with the racial instincts. The ideas and activities of children are the stuff out of which their thoughts are made. In early life this material is social, and it is social because it is racial. The force of this social instinct is seen, among other ways, in the number of clubs formed by boys without the assistance of adults.

Children are rarely inattentive to work which they regard as their own. The group sentiment is always active in determining what ideas shall occupy the focus of consciousness. Making children feel that the work is theirs, and not the teacher's, means securing

attention. This can only be done by utilizing the racial instincts in the educative process.

The productive efficiency of the energy released by group sentiment is seen in the results accomplished under the name of play. It is not the nature of the activity that distinguishes work from play so much as the mental attitude assumed toward the occupation.

The utilization of the racial instincts in securing attention to educative ideas has been resisted by schoolmen largely because of the educational dogma of effort. Attention does its best work when the feeling of effort is wanting. Effort indicates resistance or strain, and accompanies inefficient attention.

Attention is determined by past and present states of consciousness. In childhood, these states of consciousness are largely racial and social, and continued attention can only be secured by creating educational situations in which the school consciousness loses its identity in the racial and social consciousness.

(*a*) *Periods of Work in Learning.* D. STARCH.

The purpose of this experiment was to determine the relation of the length and distribution of periods of work to economy in learning. The learning consisted in associating numbers with letters. These associations were formed while transcribing prose into numbers.

One group of persons worked 10 minutes at a time twice a day for six days. The second group worked 20 minutes at a time once a day for six days. The third group worked 40 minutes at a time every other day for six days.

The records show that the 10-minute group improved more rapidly than the 20-minute group and the latter improved much more rapidly than the 40-minute group. The 20-minute group transcribed on the average 31 more letters in every five minutes than the 40-minute group and the 10-minute group transcribed on the average ten more letters in every five minutes than the 20-minute group.

(*b*) *Transference of Practice.* D. STARCH.

The object was to determine the effect of training in one fundamental arithmetical operation upon the efficiency in other arithmetical operations.

A group of persons was trained for fourteen days in mental multiplication. Before and after this training they were tested in other arithmetical processes, such as adding fractions, adding, subtracting, and dividing numbers. These tests were also made upon another group of person who did not do the fourteen days of training. The

improvement which this group of persons made was deducted from the improvement made by the first group. This left an improvement 56 per cent. as large as the improvement in the mental calculation during the fourteen days. This improvement was due almost entirely to the ability, acquired in the training, of holding the numbers better in mind.

The Consulting Psychologist. C. E. SEASHORE.

The consulting psychologist is an expert in psychology who may be employed as adviser in matters pertaining to the ascertained facts of mental life with reference to their bearing upon a given practical situation, or may be employed to search for, or verify, such facts by special investigation. This field of work is not covered by academic teaching or research, nor by the common application of psychology in practice. The work of the consulting psychologist falls roughly within the four general fields: (1) mental pathology, (2) education, (3) the arts, crafts, professions, and industries, and (4) eugenics. The scope of these fields is illustrated in detail and a concrete illustration of actual work is given. The consulting psychologist must be thoroughly trained in laboratory psychology and be fully conversant with the practical field in which he is to act, and must rise through a series of apprenticeships. Some of his essential traits and limitations are illustrated negatively: he is not an administrative officer, not a practicing physician or teacher, not a pure scientist, not a reformer, not deprived of scientific freedom. He has chosen some phase of applied psychology as his profession and pursues it intensively as a life work.

JOINT SESSION WITH THE WESTERN PHILOSOPHICAL ASSOCIATION

Topic: Philosophical and Psychological Usages of the Terms Mind, Consciousness, and Soul.

J. R. ANGELL.

The term soul has generally been applied to the supposed spiritual essence of human personality which persists after death. As such it is connected with problems not soluble by ordinary empirical methods. Psychology as an empirical natural science has consequently ceased to use it as a familiar part of its terminology.

The term mind as meaning a durable psychic entity has also come to enjoy a highly precarious position. William James' defense

of the 'Thought of the Moment' as the only thinker needed in psychology is the classic expression of the passing of the old-fashioned conception of the mind. Mind as a term applicable to the entirety of mental phenomena, but not to a stable entity, continues to serve a useful function.

If concrete psychological events could be explained mo e effectively than otherwise by the hypothesis of a soul or a permanent mind, no doubt these terms and their corresponding concepts would still be actively represented in our literature. But this is not generally thought to be the case.

Signs are not wanting that the term consciousness itself is likewise in dange of extinction or at least essential modification. As a class name valuable for designating a group of phenomena presenting peculiar problems, it will presumably long remain with us. This will no doubt prove true despite the difficulty of defining it and despite the efforts of certain metaphysicians to reduce consciousness to one among other relations sustained to one another by objects. But there is unquestionably a widespread movement on foot in which interest is centered in the *results* of conscious process, rather than in the *processes* themselves. This is peculiarly true in animal psychology; it is only less true in human psychology. In these cases interest is in what may for lack of a better term be called 'behavior'; and the analysis of consciousness is primarily justified by the light it throws on behavior, rather than *vice versa*.

If this movement should go forward, we should probably have a general science of behavior, recognizing two ma'n sub divisions, physiological and psychical.

In any event this is a period in which sharp distinctions of one science from another are commonly regarded as both impracticable and unprofitable. With the movement in psychology over toward biological and physiological conceptions, it may reasonably be expected that the word consciousness will take on more marked dynamic and functional characteristics, so that even if the term persists, it will undergo material alteration in its implications.

B. H. Bode.

The realistic movement has contributed a variety of definitions of consciousness, the definitions here discussed being those which identify consciousness respectively with awareness or apprehension, with context, or setting, and with the function of representation or meaning. The first of these is obliged to recognize two kinds of

objects, viz., those which exist only when there is awareness—*e. g.*, pleasures and pains—and those which may exist apart from awareness. Hence it is obliged to postulate two different types of response on the part of the perceiving organism, the one being a condition of awareness only, while the other is a condition both of awareness and of those qualities or objects which exist only when there is awareness. This implication of the position finds no support in the present-day psychology of perception. The actual test between the kinds of objects is not this hypothetical difference in our responses, but in context or relationship. In applying this test, however, the realist confuses the distinction between fact and meaning or validity with the distinction between valid fact and validating experience. This same confusion occurs in the form of realism which discards awareness and finds in context or relationship the source of the differentiation between consciousness and object. It, therefore, has no advantage over the other theory. The assertion that consciousness is the function of meaning assumes a hard and fast distinction between sense-quality and meaning, which does not exist in fact. The view of instrumentalism, which has much to say for itself, is that consciousness is a name for the entities created by the psychologist in the furtherance of his particular purposes. It is not a distinct entity or function or relationship. The business of the psychologist is with the acts which constitute the course of experiencing.

G. A. TAWNEY.

The ancients were familiar with the facts that man may know his own knowing and that many men know the same things, con-sciousness. But they had no terms which regularly denoted these facts, and they knew no problem of consciousness such as ours. They were interested in the relation of the universal to the particular, of form to matter, both terms of the problem being for them aspects of existence. Christianity *et al.* laid emphasis on the soul and the heart with their motives, sins and destiny. Like some of the ancients, it identified these with the man. Descartes distinguished thinking substance from extended substance, conceived minds as individual things related to each other and to other things, and used the new term consciousness to mean the mind's recognition of its own contents. The word consciousness already meant the knowledge by many minds of the same things. Descartes was chiefly responsible for the doctrine of the subjectivity of the sense-properties of things and for the distinction between the primary and secondary properties.

Go ahead

Locke, and the early English psychologists generally, use consciousness to mean the mind's perception of its own processes. But they also tend to use it for these processes themselves. The empirical aspect of mind is identical with consciousness. Metaphysically, mind is something more than matter in motion. Thus, mind or consciousness is the *locus* of ideas, emotions, choices, etc., and is made up of these things themselves. Most of the central problems of modern philosophy grow out of this conception. Romanticism and especially the romantic philosophers, such as (*e. g.*) Kant, emphasized the independence and autonomy of 'inner life' or 'inner world,' and modern psychology is, on the whole, the science of this 'inner life,' its relations to the body and the 'external' world, its elements and the laws of their compounding, etc. The terms 'mental states,' 'states of consciousness,' etc., do not alter the situation. The functional psychology defines function in terms of reflex sensori-motor process,—an adjustment of the traditional conception of consciousness to the laws of biology and physiology. It still discusses the relation of mind to body and other problems growing out of the traditional conception of consciousness. It fails to lay a scientific foundation for logic, ethics, the philosophy of religions and sociology, which deal with actual human experience and human beings rather than with that ideal construct called mind or consciousness. What is needed is a psychology of that kind of behavior which is marked by immediate value, selective repetition and, to use words of much narrower connotation, intelligence and character. If we could return to the objectivity of the ancients it would be a distinct gain. Of recent attempts to revise the traditional conception of consciousness, the paper gave special attention to Woodbridge's definition of consciousness as an order of relations.

E. H. LINDLEY.

The recent developments in the domains of animal behavior and of abnormal psychology have subjected the orthodox conceptions of consciousness to a severe stress.

The present trend toward a purely objective study of behavior (Thorndike, Judd) tends to eliminate consciousness and to substitute experience or intelligence, terms as yet equally vague.

The problem of the subconscious, often conceived crassly enough, sets a real problem. The hypothesis of unconscious cerebration, on the other hand, carries a load already staggering. And in as much as we know less about the brain than about consciousness, the effort

to banish all the difficulties of psychology to the limbo of unconsciousness, seems little short of evasion.

Awareness as the criterion of consciousness is attacked from two radically different quarters. Dr. Morton Prince has shown that in a case of dual personality a somewhat elaborate computation was carried on without the awareness of the dominant personality of the moment. And Professor Titchener in his *Experimental Study of the Thought Processes* says: "I doubt if meaning need be necessarily conscious at all." And he describes a given recognition as "simply a recognition without consciousness." He and other writers insist that the *Aufgabe*, which determines the trend of consciousness in the solution of problems, may be unconscious. In short, the most essential factors in the composition of so-called conscious attitudes are themselves unconscious. In a word consciousness and awareness are not coextensive. These cases from normal and from abnormal psychology emphasize the dilemma in which our science finds itself.

If psychology minimizes the conscious factor, if it subordinates the pyschic to the physiological, does this not involve the surrender of the peculiar and unique task of psychology as distinguished from biology and physiology? Is it not precisely the problem of psychology to make the most of consciousness rather than to minimize it?

To conceive consciousness in terms of levels or forms and not as a point; to employ to the utmost the principle of gradation, so fruitful elsewhere; to examine exhaustively the evidence for the subconscious; to try out the hypothesis that the transition from neural to conscious is an elaborate series; to be stimulated by the new conceptions of energy, now developing in physics; to hope for a new and illuminating statement of the psychophysical relation; and to seek to conserve to the conscious end of the series all the distinguishing marks that truly belong thereto; to supply for the psychology of religion and for abnormal psychology a theory of consciousness adequate to their needs; such constitute a portion of the urgent tasks of psychology.

Case-taking in the Psychology of Religious Experience. ROWLAND HAYNES.

By case-taking is meant a procedure similar to that of the physician or psychiatrist. It uses as sources of information observation of the subject under questioning and tests as in a clinic, the answers of the subject studied, and the testimony of friends and relatives where obtainable. It includes information on the family history of the

subject, his past religious history, and his present religious status. On the basis of this information it seeks to diagnose this individual's religious experience, to prescribe treatment whereby the individual may make the most of his own religious capacities, and to observe the subject's reaction under treatment.

Studying the method used in the psychology of religious experience we find first, the genetic method, much in vogue at present. This is of value in giving a proper background for all study of religious experience. Its practical usefulness is limited by the fact that it covers the geology rather than the chemistry of religious experience. Second, the biographical method is case-taking at long distance and is handicapped by usually having only snap-shots of striking events in the religious careers of extraordinary people. Third, the questionnaire gives occasional helpful suggestions, but for careful diagnosis is about as valuable as letters answering patent medicine advertisements, since the patient frequently doesn't know how to describe his case accurately without questions from the interviewer adapted to his particular case. Fourth, laboratory tests, which reveal past experiences of the subject, are to be distinguished from laboratory experiments, which manipulate experience in the laboratory. Such tests are of great value when used in connection with case-taking and the past history of the subject.

Case-taking in religious experience has two difficulties. One, that of having the clinical picture distorted by the notions of the case-taker, it shares with case-taking psychiatry. The other is peculiar to the psychology of religious experience. In psychiatry the facts of abnormality are easy to note. In religious experience the relevance of facts to be noted is not always easy to determine.

A sample case was given to illustrate the method.

The Question of an Ultimate Religious Element in Human Nature. IRVING KING.

Many thinkers, both religious and scientific, have tended to postulate an ultimate religious element or instinct. The religious thinker does this primarily because he feels that a natural origin of religion would rob it of all its value. The scientist, on the other hand, who traces religion to a primal instinct probably feels that the apparent universality and persistence of religion point to such an origin. He may also be led to this view by too narrow a construction of the axiom that every effect must have an adequate cause. From this latter, he assumes that the religious quality can have come only

from something which was also religious. It was pointed out in the paper that none of these grounds are sufficient for assuming a religious instinct. Neither is a regulative instinct a plausible hypothesis. It is not clearly evident that the primal instincts of living beings need a *deus ex machina* in the form of a regulative instinct to bring them into harmony. Instincts decidedly out of harmony with the welfare of the organism or of the race could hardly develop.

It seems much simpler and closer to the facts of human nature to think of religious attitudes as 'constructs' dependent upon the social environment for their appearance in each individual and in each generation. The large non-religious classes of today are probably genuinely irreligious and testify to the need of a favoring social environment for the production of the religious attitudes.

The Instinctive Bases of Religion. EDWIN D. STARBUCK.

Religion must surely be regarded as one among the human instincts. In a genetic approach there are at least three ways of accounting for the instinctive nature of religion. The first is to show that there is a particular quality of the mental life traceable throughout its evolution, of which the religious instinct is the developed equivalent. This paper will chiefly be concerned with this contention. The second way for accounting for it is in terms of an acquired sense through experiences of certain types of useful social adjustment. The third method is to call religion a fusion or compound of the various normal human instincts.

The limitation of this point of view is in explaining how the harmony among the various instinct-ingredients in the religious consciousness has been preserved. There must be a delicate sense of proportion or relation or fitness or harmony that directs consciousness and determines at each point the particular advantageous response or emphasis. Such a sense among animals has been admitted by genetic psychologists generally. There are two phases of this. The first is the direct and immediate evaluation of the worth of a reaction to the organism. This I propose to call the *cosmo-æsthetic* sense, following the original meaning of the word kosmos—order, relation, proportion. Without this I believe it impossible to understand the non-rational successes of religion, art and morality in feeling their way into higher modes of reaction and into a profounder sense of reality. But the cosmo-æsthetic sense alone could give only a '*retrospective*' evaluation. There is, however, the 'prospective reference' as well. I propose to call this the *teleo-æsthetic* sense. The religious impulse reaches out

toward an ideal fulfillment. Vital organisms also seem to act under the influence of an obsession toward self-enlargement and a feeling after that type of reaction that will complete and fulfill the present need. On such an assumption one can describe consistently by the methods of genetic psychology the anticipatory qualities in moral intuition, the non-rational behavior of the poetic passion and the apparent success of religion in feeling after an adjustment or an ideal reality. I venture to hope also that the recognition of a cosmo-æsthetic and teleo-æsthetic sense will bring a body of useful description to the field of the subliminal consciousness which has been a too convenient dumping ground for the ugly problems of the psychology of religion.

The Genesis of the Group Spirit. EDWARD S. AMES.

Any company of persons coöperating together in a common enterprise develop a sense of unity and a feeling of deference toward the combined judgment and authority of the group. This is experienced in slight degree by persons brought together in such casual relations as those of fellow travellers in a railway coach. In more sustained associations, such as workmen in a factory experience, there is built up a more elaborate and persistent group feeling.

What psychological account is possible of this sense of the social whole? Imitation is not a sufficient explanation. The experience is too complex to be stated in terms of the relation of the ego and alter, or that of the ego and many others. Not only are the members of the group in interaction among themselves, but they are also reacting in reference to the objects and plans which go beyond the immediate situation. This complexity may be described still further. The ego itself is a more or less closely organized community of our various social, material and reminiscent selves. It involves, therefore, relations of the most organic sort with other similarly complex egos, with which it forms what we call the group. Within this group there are many ego and alter relations, but this group itself possesses its group organization with reference to some alter or to some plan of action which is objectified by the group. Thus the members of a given family stand in reciprocal relations, which reciprocal relations are determined in turn by reference to the neighborhood life, to other families, and to the plan and sphere of action characteristic of the family. The consciousness of the family group arises not through the imitation and opposition of the members, but through their coöperation in reaching certain ends. The sense of the group

comes to consciousness with the effort to work out this coöperation. This coöperation is carried on through stimulation and response, the response being not always an imitation of the stimulating act, but more often a different reaction for which the stimulation is the cue. In most of our social experiences the responses called forth by our acts are of a different kind yet organically related to the attainment or hindrance of a common end. Our acts, or attitudes, that is, our tendency to action as expressed in the truncated acts we call gestures, become in this way the stimuli to corresponding acts or attitudes on the part of others. All communication, and especially all face-to-face communication, has therefore this most stimulating and vivid quality of the nascent reproduction of complex situations, of coöperation and conflict with reference to the further conduct of all the social groups represented. In this interplay of conversation there rises a complex background of associations and implications which is felt by the participants as something urgent and insistent, suffused with the warmth and intimacy of a personal quality.

The Several Origins of the God-Ideas. JAMES H. LEUBA.

In this paper psychological and historical arguments are advanced in support of the following propositions:

1. Gods grew out of several different ideas of superhuman, unseen, personal beings.

2. These beings had an independent origin.

3. The attributes of the gods differ according to their origin.

4. The historical gods are usually mongrel gods, the outcome of a combination of characteristics belonging to beings of different origins.

In a second part, applications are made of principles resulting from these propositions:

(1) To the solution of the difficulty produced by the simultaneous presence among primitive societies of apparently irreconcilable facts, namely, the presence, even among the most primitive tribes now living, of a Great God high above the others, to whom is usually assigned the function of creator; the existence among these same tribes of a rabble of spirits and ghosts; and the increasing influence and artificiality of sacrifices and prayer "in proportion as the idea of a Supreme Being grows dim."

(2) To the detection of the confusion of the impersonal Absolute, a god of metaphysical origin, with the Christian God, an empirical, personal one. It is this confusion which leads to utterances such as

this, "psychology neither rejects nor affirms the transcendent existence of the religious object; it simply ignores that problem as being outside of its sphere."

The failure of anthropologists and of historians to recognize several sources of superhuman, unseen agents and the distinct gods arising from them, is held to be one of the chief causes of the unsatisfactory condition of our knowledge regarding the beginnings of religion.

An Unusual Case of Color-blindness. FLORENCE RICHARDSON.

The subject, a young man about 24 years old, first showed difficulty in getting certain colored negative after-images. Tested with the Holmgren wools he matched the red skein normally; the matches for green were few, but correct; but for the purple he chose pinks and light reds, asserting that the red and purple skeins were of the same color, but that the purple was a *thin* red, while the other was a *good* red, and so far as mere color was concerned, any skein that would match one would match the other. A skein approximating a standard blue he matched hesitatingly with light yellows, light greens, very light browns, light grays and other blues. Given a yellow skein, he matched it with the darker of the light greens, browns, grays, blues and yellows, stating that the blue and yellow skeins were alike except as to brightness, the blue being much brighter than the other and neither of them having color.

The subject has never had any serious illness. An ophthalmological examination shows no pathological condition of the retina. The visual acuity is normal, and there is no coloration of the lens. There are color defects in the immediate ancestry. Everything favors the assumption that this is a congenital and not a pathological case.

Tests with the Nagel cards and the Hering tester showed an inability to discriminate yellows, blues and grays, a normal sense for red and a weak sense for green.

A spectroscopic examination showed that his spectrum is not at all shortened. A first neutral zone begins at the *D* lines and continues to the *F* line where the green appears for a *very* narrow band, and is often not present. A second neutral zone extends from this point almost to the *H* line where the red begins again. This violet end of the spectrum he refers to as the thin red end. The point of maximum brightness is in the blue.

Of the Hering colored paper discs, the orange, yellow, blue-green, green-blue, and blue are selected as colorless.

The subject obtains red negative after-images with ease, even when the original stimulus is not green to him, but gray. Only in a very faint illumination are colored after-images from red obtainable. The after-images of blue and of yellow, naturally uncolored, differ only in brightness. He has not, so far, been able to obtain positive after-images. He cannot fixate a strongly illuminated point.

The black-white retinal zone is approximately normal. Naturally the blue and yellow zones are not present. The red zone extends irregularly from 30° on the temporal meridian through 30° on the upper and lower vertical meridians and out to 60° on the nasal meridian. The green field in much constricted, though at one point it overlaps the red.

A Case of Colored Gustation. JUNE E. DOWNEY.

The paper reported a detailed analysis of a case of colored gustation. Evidence was presented that the sense of taste of the young man under consideration is defective, the evidence being particularly strong for the taste of bitter. Through reliance upon the tactual and color components of the taste-blend, the young man was, however, enabled to pass accurate taste-judgments. His threshold for the presence and the recognition of the four standard tastes was found to be average or, in the case of bitter and sweet, slightly better than average. Extensive stimulation and the presence of odor increased the vividness and persistence of taste-colors. These colors did not appear in minute stimulation of the tongue.

The taste-colors were definitely localized in the mouth, were of hallucinatory vividness, and had a uniform color-tone and persistence under constant conditions. The presence of objective colors introduced noticeable conflicts with the taste-colors. The color values for the different tastes were as follows; bitter, a dull orange-red; sweet, a brilliant black; sour, red or brown and, at times, possibly green; salt, if strong, induced a crystal-clear experience, if weak, gave a slate or gray color. The salt experience was found to neutralize or rather to banish the color of sour, and to partially neutralize that of sweet. The colors of sweet and sour were found to fuse; those of sweet and bitter to conflict.

For several flavors an alternation of green with a violet-pink taste was reported with great constancy. Possibly this alternation could be explained as that of a negative after-image. Other shifts from one color to its complementary were reported infrequently.

It was found that the presence of a vivid taste-color noticeably retarded the recognition even of very strong flavors.

The interpretation offered for the case is that the synæsthetic element is a true component of the perceptual fusion and in the present instance easily accounted for by the color stimulation present in taste-experiences, a component which has in this case acquired an unusual value through a lowered sensitivity of taste. In general it is suggested that the motor attitudes common to different forms of sense stimulation may explain many cases of synæsthesia, particularly if there be an inherited tendency to dissociation or if such a tendency be induced by disease or by abnormal conditions of the sense-organs.

A Useful Demonstration of Tonal Fusion. W. VAN DYKE BINGHAM.

Following upon the usual analytical demonstration that the sound given out by the string of a monochord consists of a fundamental tone and a series of upper partials, a synthetic procedure is effective. The clang may be reconstructed by the fusion of the pure tones given out by a series of forks having the pitch of the partial tones which have been found to be the components of that clang.

Wundt makes the statement that this is impossible, because it is necessary that there shall be only one predominating element in the fusion; and lest more than one tone be prominent, "all the partial tones must be sounded at exactly the same time." This difficulty can be met in the following manner. The reeds of a harmonium are tuned to the exact pitch of the forks, which are mounted on resonance boxes. By means of a depression bar one plays for some seconds a loud chord which includes among its notes all the pitches of the desired partial tones. Thus the several forks are gradually set into sympathetic vibration. If now the loudly sounding harmonium is suddenly silenced, there is heard a simple clang, strikingly resembling in color the sound of the monochord. Indeed, the listener is at first apt to judge that the monochord string has somehow been actuated.

The forks used by the writer in the present demonstration are the Koenig series, $c', g', c'', e'', g'', 7b$ flat$''$, c''', d''', e'''. It will be noted that these are the upper partials of the fundamental, $c = 128$ v.d. Although no fork of 128 v.d. was used, the clang as heard seemed to have that pitch. The explanation offered is that since each of the forks makes with its next neighbor in the series a subjective difference tone of 128 v.d., the total effect is a difference tone sufficiently intense to strongly predominate over the weaker objective higher tones and to serve as fundamental for the clang.

The Adjustment of an Asymmetrically Distributed Series of Contradictory Judgments. HERBERT WOODROW.

The sort of series here considered is that obtained by the method of minimal changes, in those cases in which there occurs a 'doubtful zone' including an unequal number of 'greater' and 'not greater' judgments. Series in which the doubtful zone contains more 'greater' than 'not greater' judgments (in the case of the upper differential limen) are often obtained, and are to be expected, with especial frequency whenever the distribution of limina is asymmetrical. In such cases the method of taking the average of the limits of the doubtful zone is unjustifiable. This fact has even caused some investigators to discard the method of minimal changes. A satisfactory value may, however, be obtained from such series, in a perfectly logical manner. The presence of inversions in the series means that the limen has not remained constant even during the time required to go through one series. But one may find out what the limen is on the average for all the instants at which judgments were given. This can most easily be done by analyzing the series, which contains within its doubtful zone asymmetrically distributed 'greater' and 'not greater' judgments, into a set of component series, all of which component series are made up of equal-sized steps, and present no inversions. It is always possible thus to analyze an asymmetrical series into such a set of symmetrical series. This set of component series contains all the data contained in the original series and assumes nothing not found in the original series. In the case of each of these component series it is justifiable to take the usual average of the quantities giving the last 'not greater' and the first 'greater' judgments as the limen for that series. The average of the limina obtained from the component series gives the average limen for the original series. It is a quantity to which attaches the probability ½ for a 'greater' judgment. This method takes into account every 'greater' and 'not greater' judgment contained in the doubtful zone. Whenever the distribution of these judgments within the doubtful zone is asymmetrical, the result obtained by the method described will differ from the middle point of the doubtful zone. In practice it is unnecessary to resolve the original series into components, and to take the average of the limina derived from them. The same result will always be obtained simply by transposing the 'greater' and 'not greater' judgments of the original series from the quantities at which they occur to other quantities represented in the series, until all inversions are gotten rid of, and

then taking the point midway between the last 'not greater' and the first 'greater.'. This procedure requires the size of the steps of the original series to be equal, but does not require limitation of the subject's judgments to two categories.

Two Simple Test for Fatigue, with Some Records. GERTRUDE KLINE AND J. B. MINER. (Read by title.)

The attempt was made to devise a home experiment for motor and another for mental fatigue such that the change in endurance and efficiency could both be measured. The motor test was a combination of the tapping and strength tests attained by a regulated movement of the index finger between the table and a horizontal cardboard surface. The mental test was a modification of the computation test in the form of continuous division examples in which each division by 6, 7, 8 or 9 was carried three places and thus provided a new dividend. In each test there were four series of 25 examples or movements each, with ten seconds interval between each series allowed for making the record in seconds. Endurance was measured by the ratio of the fourth to the first series. The experiments were tested for nine periods during the day on one subject for 27 days and on a hundred college students for one day. The results indicated that an hour's continuous practice would be enough to avoid the disturbing effect of practice, and that, with this eliminated, the motor test was exhausting enough to determine individual diurnal curves for both efficiency and endurance, while the division test was not sufficiently severe for college students. Experience with the motor test also indicated that the height of the cardboard surface might better be defined by the length of the middle finger and the subject required to keep only his thumb, third and fourth fingers and forearm in contact with the table. Before each test estimates of the degree of weariness and of the amount of physical and of mental activity immediately preceding the period were made by the subjects on a scale of five. These were used to interpret the fatigue curves. The Chauvenet formula for rejecting extreme cases was advocated as a means of indicating their effect on the curves in experiments where conditions are not all under laboratory control. In these experiments such rejection changed the form of the group curves but slightly. Home tests on a large group offer an important check on laboratory tests of a few subjects. Tests like those described when repeated at intervals show what people naturally do, while a test given but once or twice shows what they

can do when stimulated to it. Before the final form of the diurnal curve for these tests is determined the results given should be checked by the same experiments on a smaller group under laboratory conditions.

The Size-distance Problem and its Experimental Solution. JOSEPH JASTROW. (Read by title.)

The size-distance problem is typical of the physiological support of the perspective processes. The common view emphasizes that we bring into play the physiological mechanism, and upon the basis of the data thus contributed build up a psychological interpretation. Conforming to this view is the natural supposition that the size-distance processes act similarly under varying conditions, and that their contribution when separated from the psychological setting, likewise reveals the typical procedure in ordinary vision. The view maintained in opposition to this is that the real significance gives a reverse order of values to these factors; it maintains that as a fact, the psychological processes lead, awaiting only the slight suggestions of a physiological situation; furthermore, that the mind is keenly anxious to reach an estimate by clearing up the factors of perception and to shirk or ignore physiological processes as much as possible. Accordingly their independent status would show a very meager power to solve such problems as the size-distance relation. A preliminary series of experiments with an apparatus devised to produce points of light in a darkened room under controllable conditions seems to support this position. It shows that estimates as well as settings of distance under those circumstances are extremely vague and variable, and that even here the eyes will seize upon any factor, such as brightness of the light to avoid and evade the basis of the size-distance estimate. The experimental attack upon the problem proposes further to add one by one the possibilities of extraneous inference and interpretation—such as a slight amount of light in the room, the presence of standard objects for comparison, the estimate of distance when walls and floors are visible and when not—and all of these in a preliminary fashion corroborate the position here taken. If these conclusions hold, the entire conception of the physiological support of the visual processes must be entirely revised and the precautions of an experimental procedure made indefinitely more rigid, for they show that the slightest suggestion even though subconsciously availed of, is sufficient to transform a seemingly physiological judgment into an extraneous psy-

chological inference. Stated crudely, we seem disposed to use any and every method to guess at distance by clues and signs rather than to judge them through the recognized physiological processes. The latter are doubtless real and in certain situations efficient, but their practical limitations seem thus established. The contribution is presented at once for its experimental and its theoretical interest.

An Experimental Study of the Fusion of Brightness and Color Sensations. The Locus of the Action. C. E. FERREE. (Read by title.)

Studies in the Psychology of the Feebleminded. EDMUND B. HUEY.

American institutions for the feebleminded are establishing departments of psychology, and these are using the classification and terminology tentatively adopted by the American Association for the Study of the Feebleminded, at its recent meeting at Lincoln, Ill. In brief, "feebleminded" is to be "used generically to include all degrees of mental defect due to arrested or imperfect mental development as result of which the person so affected is incapable of competing on equal terms with his normal fellows or managing himself or his affairs with ordinary prudence." The feebleminded are of three classes: 1. Idiots—"so defective that the natural development never exceeds that of a normal child of about two years." 2. Imbeciles, above two but not above seven years of mental age. 3. Morons, above seven but not above twelve years of mental age.

There are low, middle and high grades of each, and epileptic, mongolian, etc., are used as qualifying adjectives. The Binet scale has been very useful in determining mental age, but additional scales and norms are needed. Children not retarded more than three years (two years if not above nine) may be recorded as 'retarded,' using backward as the popular equivalent.

Examination and classification in these terms, at the Illinois Institution, shows that of a year's consecutive admissions imbeciles are most numerous, then morons, with fewest idiots, though a mental age of one and one half to two years is the most frequent of all. Admissions above the mental age of ten are infrequent and hard to retain. Above a mental age of twelve they are almost unknown, though this is the most populous and most troublesome zone of defect.

Special study of 32 of these border cases shows the lines of transition from feeblemindedness to 'normal' dulness and instability, to neurasthenia, hysteria, insanity, and epilepsy and suggests these and other groupings of border cases. The characteristics of each group should be brought out by further clinical studies.

New tests are needed in various directions and university departments of psychology and education might well coöperate with the clinical laboratories in dealing with certain insistent clinical problems, as (1) the selection of the mental functionings which best represent the individual; (2) the selecting and devising of tests which are real tests of these functions; (3) application of these tests to sufficient numbers of successive ages of normal children, to establish norms for all the important functions.

PROCEEDINGS OF THE SIXTH ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY, CHATTANOOGA, TENN., DECEMBER 27 AND 28, 1910

Report of the Secretary

The Sixth Annual Meeting of the Southern Society for Philosophy and Psychology was held at Chattanooga, Tenn., on Tuesday and Wednesday, December 27 and 28, 1910, in conjunction with the annual meetings of the Southern Educational Association. There were, in all, four sessions. The meeting was opened on Tuesday forenoon, Professor Edward Franklin Buchner presiding, in the Assembly Room of the Jewish Temple. On Tuesday afternoon occurred a joint session with the Child Study Department of the Southern Educational Association which was held in the Unitarian Church and, in the absence of the president of the Child Study section, was presided over by Professor David Spence Hill, the secretary of that department. Following this joint session, came the address of the president on 'Learning and Forgetting.' The Wednesday sessions were held at the Jewish Temple, the Child Study Department being invited to join its program with that of the Society in the afternoon session. With one exception, the program was carried out as announced, and the various papers were well received and vigorously discussed.

At the business meeting the officers for 1911 were elected as follows: *President*, Dr. Shepherd Ivory Franz, Government Hospital for the Insane, Washington, D. C.; *Vice-President*, Professor A. Caswell Ellis, University of Texas; *Secretary-Treasurer*, Professor Robert Morris Ogden, University of Tennessee. Elections to vacancies in the *Council* constituted the elective membership of that body as follows: to serve one year, Professor David Spence Hill, Peabody College for Teachers, and Professor W. C. Ruediger, George Washington University; to serve two years, Professor Bruce R. Payne, University of Virginia, and President Haywood J. Pearce, Brenau College; to serve three years, Professor Edward Franklin Buchner, Johns Hopkins University, and Professor William Benjamin Smith, Tulane University.

The report of the treasurer, presented and approved by the Council, showed a balance on hand of $77.21. It was voted that the expenses of the secretary in connection with this meeting, to the extent of $15.00, be borne by the Society.

On nomination of the Council, the following were elected to membership in the Society: Professor Bird T. Baldwin, University of Texas; Dr. Robert S. Carroll, Asheville, N. C., Rev. Frank Philip Hiner, Walnut, N. C.; Mr. H. M. Johnson, Johns Hopkins University; Miss Grace Helen Kent, Government Hospital for the Insane, Washington, D. C.; Professor Thomas A. Lewis, Richmond College; Professor Arthur O. Lovejoy, Johns Hopkins University; Dr. John M. Moore, Nashville, Tenn.; President Robert P. Pell, Converse College; Professor Jno. Pickett Turner, Vanderbilt University, and Mr. George R. Wells, Johns Hopkins University.

It was voted that the next meeting of the Society be held in Washington, D. C., in affiliation with the American Association for the Advancement of Science, provided that the American Psychological Association and American Philosophical Association take like action.

A resolution of thanks was voted to Rabbi Miller and the congregation of the Jewish Temple for their hospitality in providing the Society with a convenient place of meeting.

Abstracts of Papers

Some Supposed Racial Tendencies of the American Negro: A Plea for a Psychological Study of the Race Problem. Thomas P. Bailey.

The race problem is primarily one for the practical psychologist. Prejudice, pride, enmity; the possibilities as to the two races living together; the kind of education needed by the Negro;—all these are psychological problems. Popular psychology has decided that the average Negro is strong in such sensational tendencies of character as the appropriative, the gregarious and the expressive; and weak in such relational tendencies as the assertive, the reponsive and the perceptive (observational). The Negro is regarded as sensational and affective rather than intellectual and volitional. His imagination is thought to be merely concrete and sensuous, his assimilative powers as superficially analogical, his imitation mimetic, his voluntary attention weak, etc. The frontal sinus guess holds its own without investigation. No one is in a position to say any-

thing worth while that is scientifically definite with regard to Negro character. And yet the need of such knowledge is imperative, no matter how the so-called Negro problem may be solved.

Locke's Place in the History of Thought. JNO. PICKETT TURNER.

Though there are many witnesses to Locke's wide-spread influence, just what Locke really taught is still an open question. A glance at his antecedents may help us to understand and more adequately set forth his doctrine. According to his own confession, it was Descartes who first awakened his interest in philosophical problems. But the influence of Hobbes, to whom he makes no reference, is probably more important. His association with Boyle and Sydenham in later years counts for much. Locke's name is unfortunately inseparably associated with the denial of innate ideas and a passive mind, which represent the true Locke very inadequately. The theory of innate ideas had already been undermined in a constructive manner by Hobbes, who undertook a scientific explanation of mind. The passivity of Locke's mind is, after all, a matter of misplaced emphasis. Locke's attack upon the doctrine of innate ideas is out of keeping with the spirit of the *Essay* taken as a whole. It was Locke's manner of expressing his objection to what he regarded false doctrines concerning the genesis of knowledge, which must come from experience. Because of the ambiguity of Locke's statements, we must have recourse to the *Essay* as a whole. Owing to the fact that Locke undertakes no explanation of mind, his sensationalism is untenable; in his discussion of the faculties of mind emphasis is continually laid upon non-sensuous factors. The mind is always the active organizer of experience; even in primary perception it is the organizer of brute sensations. This is in keeping with Locke's original purpose in writing the *Essay*. It is not denied that Locke's statements are frequently ambiguous. But it is maintained that it is more reasonable to interpret Locke as the precursor of Kant than of Condillac. The place that has been assigned Locke in our texts on the history of philosophy should be assigned to Hobbes. Knowledge cannot be thrust upon the mind ready made, but it must be gained by experience. This does not mean sensationalism for Locke, but simply empiricism. Locke was not free from intuitionalism, which he attacked, and no one more than he felt the need of what Kant regarded as the constant factor in our experience.

The Probable Influence of the Pythagorean Philosophy in Determining the Sequence of the Days of the Week. R. M. OGDEN.

It is well known that the days of the week derive their names from the seven planets of antiquity. In the supposed order of their remoteness from the earth, these planets were: the moon, Mercury, Venus, the sun, Mars, Jupiter and Saturn. But this is not the order in which the corresponding days of the week follow. When, however, we remember the Pythagorean conception of the 'heavenly heptachord' as applied to these planets, together with the fact that Pythagoras is reputed to have derived the relationships existing between the seven celestial spheres after the same formula by which he derived the intervals of the seven notes of the musical scale, we may reconstruct the order of the days of the week as we now have them.

The position of the sun in the celestial system with three planets on either side is directly analogous to the *Mese* of the Greek scale, which is the tonic with three notes above and three below. The derivation of these six notes consists in applying alternately the 'perfect' intervals of the fourth (3:4) and fifth (2:3), the fourth being always applied as a descending interval and the fifth as an ascending interval, *i. e.*, always starting from a tonic which is symbolized as 2, or a power of 2. If this procedure be applied to the planets, we shall start with the sun, or *Mese*, descend to the fourth below, the moon; ascend to the fifth above this, Mars; descend again by four to Mercury; ascend by five to Jupiter; descend by four to Venus and ascend, finally, by five to Saturn. This gives us the sequence which corresponds to that of the seven days of the week.

It may be noted that the so-called astrological derivation, of eastern origin, in which the hours of the day are each in regular order attributed to the seven planets, also accounts for the sequence we now use. Dio Cassius (b. 155 A.D.) mentions both accounts (XXXVII., 18, 19), but does not attribute the former to Pythagoras, nor does he clearly show the method of derivation to be the same as here described.

JOINT SESSION WITH THE CHILD STUDY DEPARTMENT, SOUTHERN EDUCATIONAL ASSOCIATION

Some First Measures Urgently Needed for Child Welfare upon the Part of Municipal and Educational Authorities of the South. DAVID SPENCE HILL.

After cataloging numerous issues of crucial importance today for

the welfare of children and women in the south, the author singled out two measures for the especial consideration of educators:

(1) *Medical Inspection of School Children and School Houses.*—The arguments for and against medical inspection were reviewed, and the movement for inspection heartily endorsed, attention being called to its educative and sentiment-creating value in addition to its direct benefits to the people.

(2) *State and Municipal Bureaus of Research.*—These bureaus are to take the first steps, *i. e.*, to get the data and to distribute the same concerning all matters pertaining to child-life in our cities and states such as infant mortality, diseases, degeneracy, illegitimacy, occupations, legislation, etc. These would not interfere with, but would rather aid the proposed Federal Bureau.

These two measures, if adopted, would mean the application of the scientific method of research to the roots of our troubles.

Child Labor in its Relation to Education. A. J. McKelway.

The figures of the census of 1900 are overwhelming in their proof that the child labor system is the fatal obstacle in the way of the education of children, and that in the factory villages where the employment of children is allowed, illiteracy among the children is most appalling. There are two reasons for this: first, the obvious reason that the mill is in competition with the school for the children, and second, that whenever the unskilled labor of children proves profitable, the incentive for an education, both to parents and children, is largely taken away. Census Bulletin 69 shows, for example, that the percentage of illiteracy for children from ten to fourteen years of age in cotton-mill villages is, for North Carolina, 50 per cent., as compared with the general white illiteracy of the state between these ages of 16.6 per cent. Similarly, in South Carolina it is 48.5 per cent. as compared with 14.8 per cent. for the state at large, and in Georgia it is 44.8 per cent. as compared with 10.4 per cent. That is, speaking generally, the illiteracy of the children of factory villages in North Carolina is three times as great as the illiteracy of the white children of the state at large; it is more than three times as great in South Carolina, and more than four times as great in Georgia. A recent investigation by the Bureau of Labor shows further that in the cotton-mill villages the percentage of illiteracy is increasing rather than decreasing. It is impossible to reconcile these results with the claim that the cotton mills now furnish an opportunity for the education of the mill children. The first duty, therefore, is the legislative prohibition

of such employment up to fourteen years of age, and the second, the enactment of compulsory school attendance laws for all the southern states.

Knowing and Expressing. R. M. OGDEN.

The argument of this paper is directed against the pedagogical doctrine that to know a thing implies the ability to express one's knowledge of it. The apparent psychological justification of this doctine is found in the combination of the 'structuralist's' or analytical psychologist's view that there are but three mental categories, namely, *sensation*, *image* and *feeling;* together with the view of the 'functionalist' that all states of consciousness issue in bodily adjustments, and are only complete after such adjustments have taken place.

The view of the 'structuralist' is objected to on the ground that recent experimentation has demonstrated the existence of concrete, imageless thought-contents. In case this assumption is substantiated, it no longer follows that thought must issue in relatively adequate expressions, since the imageless thought-contents are more or less indifferent to any particular type of expression. If thought consists primarily in images, there would seem to be no reason why these images should not be adequately expressed in the usual course of events. But if images are not essential to thought, the translation into linguistic or other forms of expression is a distinct process, and not directly consequent on thought.

The main body of the paper is taken up with a detailed examination of the introspective results obtained in an experiment on *meaning*, together with an attempt to demonstrate the inadequacy of the usual categories of sensation, image and feeling to deal effectually with the experience described.

In conclusion it is maintained that thought and expression are distinct processes, that adequate expression does not follow as a necessary consequence of clear thought, and that, therefore, more stress should be laid on the expressive side of education in an endeavor to cultivate the expressive art individually.

A Study in Rhythm Perception. KNIGHT DUNLAP.

Investigations so far have brought out a number of facts concerning rhythmic groups of sense-perceptions, but have not discovered the base of the grouping. The attention-wave theory, if restricted

to the rhythmised content, is obvious; if extended to the total content, it requires redefinition and proof. Certain of the motor theories may be descriptively accurate, but do not seem to get at the fundamental problem.

Extensive introspection has convinced the author that the rhythm-group is essentially connected with the specious present. All members of the group are 'present' at once to the observer's consciousness, and become simultaneously 'past' at the termination of the group. The specious present begins with the group, elongates as the group grows and contracts (or vanishes) at the end of the group, a new specious present taking its place. Introspection of other subjects is corroboratory, but introspection is not to be considered as sufficient evidence.

Experimental work in progress in the Johns Hopkins laboratory, which bears indirectly on the points raised by this theory, is covered by the following: (1) determination of the different thresholds for rate of stimulation; (2) determination of difference sensibility for internal time- and intensity-relations (several problems); (3) investigation of limits of effect of rate of stimulation on apparent intensity; (4) the state of consciousness in the intervals between groups: to be investigated if adequate means of attack are found.

Observations on Imitations in Raccoons. W. T. SHEPHERD.

The paper in some respects is supplementary to a paper 'Concerning the Intelligence of Raccoons' already published by Professor L. W. Cole, and to a paper on 'The Discrimination of Articulate Sounds by Raccoons' reported by the present writer. The same four animals were used as had been employed in the work above mentioned. At the time these observations were made the raccoons were seven months old. They had been trained on various tests but, with the exception of one individual, on none similar to those here reported. Comparative psychology defines three kinds of imitation: 'instinctive' imitation, 'gregarious' imitation and the higher order of 'inferential' imitation. The last type is exhibited when one animal sees another perform an act, its result, and then intelligently performs the same act. This type of imitation was studied in these tests.

An inclined plane of poultry wire, 4′–6″ long, served as apparatus. It was stretched across the corner of the room to a platform fastened to one wall, and had a step leading up to the end to be ascended. When a signal was given, the imitatee went up the plane to the plat-

form where he was fed. This was repeated several times, while the animal to be tested was able to see his reaction. Immediately afterward the other animal was tested for a sufficient time alone. The signal was given and all the conditions were as with the imitatee. The first raccoon was tested in this manner on two different days. He failed to imitate when left alone. However, in three of the trials with the imitatee he went up on the platform where the former was eating and smelled around. The second animal was tested similarly on two different days. She failed entirely to imitate when tested alone, but also, in one trial with the imitatee, went up on the platform and smelled around. The third raccoon was tested on two days. The first day he failed when tested alone after the imitatee had done the act 21 times. The second day in the first trial alone he went to the platform in 2 minutes, 15 seconds. In the following nine trials he reacted correctly, reducing the time to 11 seconds in the ninth trial. In the first trial that day he halted when part way up the plane and looked at the experimenter. He continued to act in this manner up to the eighth trial. In the last two trials his reactions were prefect.

The results of the experiments appear negative. Both the first and second animals failed entirely when tested alone. The reactions of the third raccoon appear more doubtful. But his hesitating manner and the large number of trials required by him to perfect the reaction, indicate that he learned by mere 'trial and error,' and not by 'inferential' imitation. The writer therefore concludes that if 'inferential' imitation is a part of the raccoon's mental equipment, the experiments reported failed to disclose the fact. In some other tests for imitation made on the same animals and reported in Professor Cole's paper, only negative results were obtained. Observations on imitation in raccoons by Mr. Davis likewise yielded no positive results.

Class and Practice Experiments upon the Learning Process. DAVID SPENCE HILL.

This paper emphasized the need for a tried series of class-experiments, tests which will evoke the responsible activity of the elementary student in educational psychology, that will be intensive, problem-provoking and interesting. The suggestions of Seashore, Dearborn, McKeag and Hill (*Jour. Ed. Psych.*, 1910) for such tests were cited. The mirror-drawing test was used successfully with a group of five students to illustrate the 'trial and success' method of

learning in the case of adults. Slight modifications in Dearborn's apparatus were introduced, the arrangement being safer than that pictured in Whipple's Manual. The experimenter also introduced for tracing a combination of semicircles in addition to the star. The class tests were made individually in an adjoining room during the first quarter of an hour of recitation periods for two weeks. Data were also got from eight persons outside the class, one of whom made drawings during forty-seven consecutive days. Graphical representations were exhibited to show curves of improvement in time (seconds) and in errors. The typical curves agree with that of Starch in recording the most rapid improvement at the first trials. Modifying factors, physical and psychical, affected many minor variations. The time and error curves, obviously, were correlated. The tests were extended to demonstrate the transfer of practice effect; both similar (star) and dissimilar (semicircle) forms, as modifying the objective factors, being used. Unexpectedly large practice effects of initial and terminal tests resulted when a whole figure of either pattern was used for right and left hands. To complete in terminal tests the 'other half' of the same figures drawn in the initial tests is unsatisfactory because of the differences between the 'up' and 'down' movements. The same half of fresh figures would appear preferable, although certain incomplete groups of tests show marked differences in the first and second trials even in this last case.

As to the availability of mirror-drawing as a class experiment: (1) A more careful standardizing of materials and procedure is needed before attempting complication-experiments, such as the transfer of skill got by special practice. (2) To illustrate the learning process, and as introductory to a full discussion and study of it, these tests seem to be practicable. They are economical of time, simple in manipulation, bristling with interesting questions and meet many of the requirements for class-experimentation where small groups are engaged.

A Comparative Study of Children's Ideals. DAVID SPENCE HILL.

Data were got in answer to the printed question: "Which person (among those you have seen, or thought of, or heard of, or read about) would you most like to resemble? Why?" Precautions were observed to obtain spontaneous, individual responses. Complete analyses were shown by means of tables and curves for: (1) ideals at various ages (7–15) of 1,431 children; (2) ideals of Group I. (857 children), of Group II. (574 children); (3) ideals of 689 boys and of 742 girls

from the two groups; (4) analyses for the boys (430) and girls (427) of Group I., and for the boys (259) and girls (315) of Group II.; (5) the percentages in regard to Group II., calculated (*a*) by using actual number of papers, and also (*b*) by using 100 papers for each age. The writer did personally all the work by the first method, while a group of students analyzed the same data by the second method. There were no very considerable differences in the results.

The rubrics were: (1) *acquaintance*, father or mother, other relative, other acquaintance; (2) *public and historic persons*, president, historic Americans, historic foreigners, miscellaneous; (3) *characters from fiction;* (4) *religious characters*, God, Jesus, persons from the Bible; (5) *opposite sex chosen.* The actual content and the percentages were given; comparisons with similar studies made in Germany, England, New Jersey and California were considered. The results will appear in detail in the *Pedagogical Seminary.*

In conclusion, an appraisement was made of this type of 'human nature' study which, it was thought, should be classed under experimental pedagogy. Unavoidable difficulties are present; the psychological complex called an 'ideal' is not defined; the reaction of the pupil is peculiarly liable to imitation; the environment of the school doubtless influences the response; the minute comparison of curves is valueless; the age error is obvious.

Nevertheless, data in several similar studies steadfastly agree in attesting: (*a*) diminution of acquaintance ideals with age; (*b*) increase of public characters as ideals with age; (*c*) predominance of acquaintance ideals with girls; (*d*) small number of ideals from fiction and also (*e*) from religion; (*f*) girls choose more ideals from the opposite sex than do boys. The graphical representation of (*a*) and (*b*) is a useful illustration of the results of the developmental process as influenced by environment. The critique of statistical methods, the problems raised and the actual phenomena exhibited, all warrant the expenditure of moderate time upon this test by classes in education. Finally, in cataloging the actual persons from various sources mentioned as worthy of emulation, as well as the reasons given in answer to 'Why?,' the teacher-student is brought to face the problem of 'What' and 'Why' in education, as well as the mere 'How' of the experimentalist.

The Pressure Curve in Voluntary Control. JASPER C. BARNES.

This paper reports the results of one series of an experimental investigation of voluntary isolation of control in a group, a pre-

liminary account of which was read before the members of the society in 1909. In the series of tests reported in the former paper, the reagents frequently stated that they used pressure to inhibit the movement of the fingers. The apparatus described in the former paper did not register the pressure curve; so, at the suggestion of Professors Angell and Carr, we devised apparatus for that purpose. Plaster of Paris pistons, resting on coiled steel springs in glass tubes, contained pegs for the support of the little and middle fingers. The pistons were made to work air-tight by the use of oil. The glass tubes were connected with two tambours by means of rubber tubing. The slighest pressure on the pegs pushed the pistons down and thus moved the recorders of the tambours.

Two groups of subjects were selected. One group was instructed to relax and the other to contract the muscles controlling the fingers; both groups were instructed to move the ring finger through a distance of 2 cm. at the rate of two times per second. Fatigue usually began to appear at the end of one hundred seconds. Automatism was acquired more rapidly by the subjects instructed to relax than by those instructed to contract. The time required by the latter was twenty per cent. more than by the former.

The processes of inhibition and control were essentially the same as those given in the former paper. The pressure curve showed sudden, sharp, and irregular changes during the first stages of the learning process, but after inhibition was learned, the pressure curve remained practically constant and indicated a very small amount of pressure. The pressure curve of the subjects that were instructed to relax was more regular and less in extent than the curve of those instructed to contract.

During the learning process, a definite visual, tactual, auditory, muscular, tendinous, or articular image of the proposed movement initiated it. Frequently the image was of the mixed type. After automatism was gained, the signal alone was sufficient to touch off the innervated finger. When the hand is supported, pressure seems to be an important element of the process of inhibition during the learning process, but gradually decreases in intensity as automatism is approached.

The Modern Interpretation of Dreams and Visions. TOM A. WILLIAMS.

The type of thought in the dream is similar to that in the trance, vision, ecstasy, somnambulism and certain deliria. The differences from these states are circumstantial rather than essential. The

manner of association of ideas resembles that in false analogy where some fortuitous character is used as the basis of comparison. Folklore supplies plentiful examples. Mystical thought is often dominated by the false analogies derived from waking visions. It is not only mystical visions which influence people; those of ordinary dreams may do so. A remarkable instance is that of a patient of Flournoy who was saved from suicide by drowning by the vision of a friend who emerged from the water and reproved her. This type of self-communing, for such it is, does not differ psychologically from that used by automatic writers, and teleologically it fulfills the purpose of conversion, reflection, writing down one's ideas or any discussion which clarifies thought.

In some neuroses a strong factor is the morbid association of ideas such as occurs in dream thought, as, for instance, one woman could never enter a street car because she had once been almost suffocated in one. Accidental associations of this kind are a striking feature of dream thought. Symbols play a large part, as Freud has shown. His view that a dream is necessarily the gratification of an unfulfilled desire of childhood is not subscribed to; nor is his view that the external stimuli are of little importance in coloring dream thought. The experiments of the Marquis d'Hervey St. Denis show the contrary, as does also a recent example of Bernard Leroy. The former showed that every one dreams all the time, but that the substance of the dream is rapidly forgotton unless brought into consciousness by an associated idea. The pathology of dreams is illustrated by a case of Janet where a woman was prevented from sleeping by horrible hypnagogic visions of the death of her father and brother from typhoid fever. Actually, she had suffered great grief from the death of her child from this cause some months before.

Lastly, the relation of dream thought to the nature of perception and delusion is briefly discussed, the lowered attention of sleep being shown to play a large part in the phantasmagoria of dream life. The noetic quality of the dream is illusory, and its logic is false until interpreted. The interpretation requires great psychopathological knowledge and analytic refinement. The value of the procedure to medical art is witnessed in the effect of the treatment of psychogenetic affections on the pathogen, to which the analysis of dreams is a useful passport.

Intellectual Precocity: Comparison between John Stuart Mill and the son of Boris Sidis: Principles and Methods: the Rôle of Affectivity and Inclination. TOM A. WILLIAMS.

From various facts and considerations adduced, the author's conclusions are as follows:

I. Proper intellectual education inevitably leads to precocity as compared with the present average level of attainment.

II. In achieving this the prime factor is the maintenance of an affective disposition of satisfaction in performing the work needed for intellectual training. The conditioning of this depends upon the following principles:

1. The preservation of a healthy physical basis for agreeable feeling tone.

2. Seclusion of interest towards the task imposed by preventing its undue dissipation upon extraneous frivolities.

3. The stimulation of interest during the performance of tasks of pure drudgery through the affective pleasure given by (*a*) the feeling of activity for its own sake, (*b*) the feeling of accomplishment, (*c*) the desire for praise—to be used but sparingly—, (*d*) the desire to excell—a motive to be strictly subordinated, and used only occasionally—and (*e*) the fear of punishment. The use of the last is a pedagogic failure, but it is sometimes necessary on account of our own imperfections.

4. The graduation of study in accordance with real psychological necessity, and not in response to a hierarchy largely derived from the imagination of philosophers. This provision, however, is of less importance than many believe, provided the principles discussed are borne in mind.

5. The avoidance of stress and anxiety in the performance of work. Such an attitude indicates unwise interference. A child's natural intensity does not require stimulation, and his mental processes should not be hurried, but guided.

III. As intellectual pabulum must be provided for the growing activities of the child's mind, this should be selected and furnished in such a way that each acquisition may be a stepping-stone to something else in a clearly conceived plan of accomplishment.

IV. The director should never forget that the acquisition of new powers is slow. Practice should be frequent, but not unduly sustained. Accuracy is essential. Results should never be measured by quantity of apparent work. The criterion is intensity of application in a fruitful direction.

Learning and Forgetting: President's Address. EDWARD FRANKLIN BUCHNER.

The problem of learning has long awakened interest. Some Greek philosophers named some of the emotional factors in its solution. Formal logic regarded learning only as a procedure in terms of concepts, it being the office of memory merely to store away these results. Analytical psychology came forward, saying all the intellectual faculties are involved, although the fundamental 'law' is that the learner is to attend to that which is to be learned. The classic experiments on remembering and forgetting by Ebbinghaus reconstructed the analysis of memory, advanced experimentation beyond the limits of sensations and movements, and the problem of learning made its specific modern appearance. Further adjustments resulted among the many advantages of the sensory-motor conception of experience. Learning is linked up with complex processes, and finds an external register. Finally the genetic and comparative points of view enable one to view it as one of the typical organic expressions of mind. It seems to be a species of 'behavior' which mechanizes itself by the elimination of the useless as the organic scale is ascended. It is also a constant mode of psychophysical adjustment in which consciousness plays an increasingly important rôle. The character of education is determined by the central position learning occupies in experience.

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NOTES AND NEWS

Sir Francis Galton died January 17, in his eighty-ninth year. Of his various and varied writings perhaps the best known to the psychological world are his *Hereditary Genius*, published in 1869, and his *Inquiries into Human Faculty*, published in 1883.

News has been received of the death of Wilibald A. Nagel, professor of physiology in the University of Rostock, at the age of forty years. Working mostly in the domain of sense physiology, Professor Nagel was much interested in the psychological side of his studies and was always exceedingly hospitable to those American students of psychology who had the privilege of working under him.

The New York Branch of the American Psychological Association held its midwinter meeting at Columbia University on February 3 and 4. An attractive program, covering three half-day sessions, had been arranged by the secretary, Professor R. S. Woodworth. During the evening of the first day a special session was held in memory of William James. Affectionate and impressive recitals of personal reminiscences, mingled with critical appreciations of James's work and personality, were listened to by a quite unusual gathering of upwards of fifty professional psychologists and philosophers.

A course of nine public lectures on 'Problems of Psychology' was given at Columbia University between January 31 and February 9. Many of those who attended the meeting noted just above were fortunate enough to hear at least two of the following lectures: 'Memory and Imagination,' by Professor E. B. Titchener; 'The Frailties of Imageless Thought,' by Professor J. R. Angell; 'Psychology as Basis for the Social Sciences,' by Professor M. W. Calkins.